

REMARKS

Claims 1, 3-13, 15 and 17-18 are pending. Please cancel Claim 2 and 14 without prejudice. Claim 1, 7 and 13 are amended herein. No new matter is introduced as a result of the present claim amendments.

35 U.S.C. § 103 Rejection

Claims 1-15 and 17-18 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Nitta, U.S. Patent 6,582,998 ("Nitta") in view of Fujishiro et al., U.S. Patent 5,294,571 ("Fujishiro").

Claim 1 recites:

A method for fabricating a flash memory device comprising:
fabricating a gate structure comprising a tunnel oxide layer, a floating gate layer, an oxide layer, and a control gate layer on a semiconductor substrate, wherein said fabricating comprises an etch process, and wherein said etch process results damage to said tunnel oxide layer;
creating a first impurity concentration in said semiconductor substrate prior to said repairing;
creating a second impurity concentration in said semiconductor substrate prior to said repairing; and
repairing damage resulting from said etch process to said tunnel oxide layer prior to creating said first impurity concentration and creating said second impurity concentration, wherein said repairing said tunnel oxide layer is accomplished using a rapid thermal oxidation (RTO) process[.], and wherein repairing said tunnel oxide layer prior to creating said first and second impurity concentrations prevents a dopant diffusion from said first and second concentration into a channel region due to said repairing.

Claims 7 and 13 recite additional embodiments of the present invention and describe similar claim limitations.

Nitta teaches replacing a first passivation film with a second passivation film after ion implantation (col. 3, lines 7-10). According to Nitta, “[t]he passivation film is formed to lessen the damage to be done on the tunnel oxide film...when source/drain regions are formed by ion implantation afterward” (col. 3, lines 17-21). During fabrication according to Nitta, after the dopants have been implanted and activated, the substrate “is oxidized...thereby thickening the tunnel oxide film at both ends” (col. 5, lines 56-62). Nitta teaches oxidation to repair damage to the tunnel oxide that occurs as a result of ion implantation (col. 1 lines 54-64). There is no motivation in Nitta for “repairing damage resulting from said etch process to said tunnel oxide layer prior to creating said first impurity concentration and creating said second impurity concentration, wherein repairing said tunnel oxide layer prior to creating said first and second impurity concentrations prevents a dopant diffusion from said first and second impurity concentration into a channel region during said repairing” as recited in Claim 1.

Fujishiro teaches forming a tunnel oxide layer by means of an RTO process (col. 6, lines 61-62). Fujishiro fails to teach or suggest repairing the tunnel oxide layer as recited in Claim 1. While there may be a motivation to combine the teachings of Fujishiro, e.g. using an RTO process, with the teachings of Nitta, to do so does not produce the method of repairing the tunnel oxide layer recited in independent Claims 1, 7 and 13, nor would such a combination render the present claimed invention

obvious. Therefore, Applicants respectfully assert that the basis for rejecting Claims 1, 7 and 13 under 35 U.S.C. § 103 (a) is overcome.

As for claims 2 and 14, Applicants assert that claims 2 and 14 recited allowable subject matter. However, in light of the above amendments, please cancel claims 2 and 14 without prejudice.

As for claims 3 and 9, claim 3 depends on claim 1 and recites additional limitations, and claim 9 depends on claim 7, reciting additional limitations. Applicants respectfully assert that claims 1 and 7 are now in condition for allowance, and therefore the basis for rejecting claims 3 and 9 under 35 U.S.C. § 103 (a) is overcome.

Claims 4-6 depend on claim 1 and recite additional limitations. Claims 8-12 depend on claim 7 and recite additional limitations. Claims 14-15 and 17-18 depend on claim 13 and recite additional limitations. Applicants respectfully assert that claims 1, 7 and 13 are now in condition for allowance, and therefore the basis for rejecting claims 4-6, 8-12, 14-15 and 17-18 under 35 U.S.C. § 103 (a) is overcome.

CONCLUSION

In light of the above remarks, the Applicants respectfully request consideration of the rejected Claims.

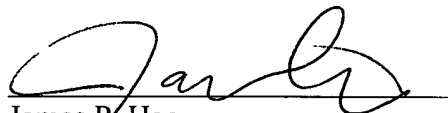
Based on the arguments presented above, the Applicants respectfully assert that Claims 1, 3-13, 14-15 and 17-18 overcome the rejections of record and, therefore, the Applicants respectfully solicit allowance of these Claims.

The Examiner is invited to contact the Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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Date: 2/15/25


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